State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER DE-08-001-04
(Supersedes EO DE-08-001-03)

Pursuant to the authority vested in the California Air Resources Board (ARB) by Health and Safety Code, Division 26, Part 5, Chapter 2; and pursuant to the authority vested in the undersigned by Health and Safety Code section 39515 and 39616 and Executive Order G-02-003;

Relating to Exemptions under section 27156 of the Vehicle Code and Verification under sections 2700 through 2710 of title 13 of the California Code of Regulations:

Proventia Emission Control Oy
Proventia FTF™ and Proventia Bobtail FTF™

ARB has reviewed Proventia Emission Control Oy's request for verification of the Proventia FTF™ and Proventia Bobtail FTF™ flow-through filters. Based on an evaluation of the data provided and pursuant to the terms and conditions specified below, the Executive Officer of the ARB hereby finds that the Proventia FTF™ and Proventia Bobtail FTF™ reduce emissions of diesel particulate matter (PM) consistent with a Level 2 device (greater than or equal to 50 percent reductions) [California Code of Regulations (CCR), title 13, sections 2702 (f) and (g) and section 2708(b)) for off-road applications and is compliant with the 20 percent nitrogen dioxide (NO_2) emissions limit for 2009 (13 CCR section 2706(a)] and as such merits designation as a "Level 2 Plus" system per section 2702(f).

This verification is subject to the following terms and conditions:

- The engine must be a diesel engine in its original configuration having one of the engine model years and engine family numbers listed in Attachment 1;
- The engine must be used in a Thermo King transport refrigeration unit (TRU) application;
- The engine must not employ exhaust gas recirculation;
- The engine must not have a pre-existing oxidation catalyst;
- The engine must not have a pre-existing diesel particulate filter;
- The engine must be four-stroke;
- The engine must be naturally-aspirated;
- The engine must be well maintained and not consume lubricating oil at a rate greater than one quart per 50 engine hours;
- Engine exhaust temperatures at the filter inlet must be at least 280°C for at least two minutes each hour of operation to ensure adequate regeneration;

- Proventia Emission Control Oy, their distributors or installers shall review actual operating conditions prior to retrofitting an engine with the Proventia FTF™ or Proventia Bobtail FTF™ to ensure compliance with the terms and conditions of this Executive Order. Proventia Emission Control Oy shall supply a TRU engine inspection checklist and data sheet with each FTF™, to ensure compatibility. Using the checklist, the installer shall review the FTF™ candidate engine actual operating conditions (e.g. lube oil consumption) prior to retrofitting the TRU with the Proventia FTF™ or Proventia Bobtail FTF™, specifically, to determine if the candidate engine is suitable for installation of an FTF™. Proventia Emissions Control Oy will also conduct training for installers on an as-needed basis. The installer shall record the results on the data sheet and the data sheet must be retained by the dealer point of sale for a minimum of four (4) years (warranty period);
- Fuel injectors must be replaced at time of Proventia FTF™ or Proventia Bobtail FTF™ installation to maintain proper combustion and operation of the FTF™. Replacement injectors shall be new original equipment manufacturer (OEM) (Isuzu or Yanmar) injectors or rebuilt/remanufactured injectors with new OEM wear components. Parts manufactured by other companies are not allowed unless they have been confirmed by Proventia to meet the OEM's dimensional and material specifications;
- The engine must be fueled with CARB ultra-low sulfur diesel fuel (less than 15 parts per million sulfur) or biodiesel blends;
- Lube oil, or other oil, must not be mixed with the fuel;
- The product must not be operated with fuel additives, as defined in section 2701 of title 13 of the CCR, unless explicitly verified for use with the fuel additive(s);
- The product must not be used with any other systems or engine modifications without ARB and manufacturer approval; and
- The other terms and conditions specified below.

The Proventia FTF™ consists of a catalyzed knitted wire mesh flow-through filter with backpressure control system, an exhaust system insulation package, and a backpressure warning indicator. The Proventia FTF™ may be installed only on engine model years and engine family numbers listed in Attachment 1 in the 25 to 50 horsepower category. These components shall be installed exactly as described in Proventia's Application for Verification of Proventia TRU Level 2 Plus Filter, dated April 18, 2008. The parts list for the Proventia FTF™ is included in Attachment 2.

The Proventia Bobtail FTF™ consists of a catalyzed knitted wire mesh flow-through filter and a backpressure warning indicator. The Proventia Bobtail FTF™ may be installed only on engine model years and engine family numbers listed in Attachment 1 in the less than 25 horsepower category. These components shall be installed exactly as described in Proventia's Application for

Extension of Engine Control Group for Proventia TRU Level 2 Plus FTF, dated March 18, 2009. The parts list for the Proventia Bobtail FTF™ is included in Attachment 3.

This Executive Order is valid provided that the warranty on the replacement fuel injectors installed at Proventia FTF™ or Proventia Bobtail FTF™ installation is at least one year.

This Executive Order is valid provided that the owners manual includes an operators daily/pre-trip inspection of the backpressure indicator gauge to determine if service is needed. In addition, the owners manual shall include the following periodic maintenance to check the Proventia FTF™ or Proventia Bobtail FTF™ system:

- For the Proventia FTF™, check to see if the TRU is being forced into high-speed operation frequently by the FTF backpressure controller (cycle would be repeating 10 minutes high speed and 5 minutes low speed), indicating excessive accumulation of soot or ash;
- For the Proventia FTF™ or Proventia Bobtail FTF™, check to see if the backpressure indicator gauge is in the red service range while running in the high-speed mode, indicating excessive accumulation of soot or ash; and
- For the Proventia FTF™ or Proventia Bobtail FTF™, check to see if black smoke is visible during steady speed operation, indicating injectors need to be serviced or replaced (e.g. check spray pattern and dripping on a nozzle test stand and check nozzle opening pressure).

This Executive Order is valid provided that the diesel fuel used in conjunction with the device complies with title 13, California Code of Regulations (CCR), sections 2281 and 2282, and if biodiesel is used, the biodiesel blend shall be 20 percent or less subject to the following conditions:

- The biodiesel portion of the blend complies with the ASTM International specification D6751 applicable for 15 ppm sulfur content;
- The diesel fuel portion of the blend complies with title 13, CCR, sections 2281 and 2282; and
- The use of biodiesel applies to devices verified to reduce only diesel particulate matter.

Other alternative diesel fuels such as, but not limited to, ethanol diesel blends and water emulsified diesel fuel are excluded from this Executive Order.

This Executive Order is valid provided that installation instructions for the Proventia FTF™ or Proventia Bobtail FTF™ do not recommend tuning the engine to specifications different from those of the engine manufacturer.

IT IS ALSO ORDERED AND RESOLVED: That installation of the Proventia FTF™ and Proventia Bobtail FTF™ have been found not to reduce the effectiveness of the applicable engine pollution control system, and therefore, Proventia FTF™ and Proventia Bobtail FTF™ are exempt from the prohibitions in section 27156 of the Vehicle Code for installation on the TRU engines listed in Attachment 1. This exemption is only valid provided the engines meet the aforementioned conditions. Changes made to the design or operating conditions of the Proventia FTF™ or Proventia Bobtail FTF™, as exempted by ARB, which adversely affect the performance of the engine's pollution control system, shall invalidate this Executive Order.

No changes are permitted to the design of the Proventia FTF™ or Proventia Bobtail FTF™. ARB must be notified in writing of any changes to any part of the Proventia FTF™ or Proventia Bobtail FTF™. Any changes to the device must be evaluated and approved by ARB. Failure to do so shall invalidate this Executive Order.

Marketing of the Proventia FTF™ or Proventia Bobtail FTF™ using identification other than that shown in this Executive Order or for an application or operating conditions other than that listed in this Executive Order shall be prohibited unless prior approval is obtained from ARB.

This Executive Order shall not apply to any Proventia FTF™ or Proventia Bobtail FTF™ advertised, offered for sale, sold with, or installed on a TRU prior to or concurrent with transfer to an ultimate purchaser.

As specified in the Diesel Emission Control Strategy Verification Procedure (title 13 CCR section 2706 (g)), ARB assigns each diesel emission control strategy a family name. The designated family name for the verification, as outlined above is:

CA/PEC/2008/PM2+/N00/OF/FTF01

Additionally, as stated in the Diesel Emission Control Strategy Verification Procedure, Proventia Emission Control Oy is responsible for honoring the required warranty (CCR, title 13, section 2707) and conducting in-use compliance testing (section 2709).

In addition, ARB reserves the right in the future to review this Executive Order, the exemption, and verification provided herein to assure that the exempted and verified add-on or modified part continues to meet the standards and procedures of CCR, title 13, section 2222, et seq and CCR, title 13, sections 2700 through 2710.

Systems verified under this Executive Order shall conform to all applicable California emissions regulations.

This Executive Order does not release Proventia Emissions Control Oy from complying with all other applicable regulations.

Violation of any of the above conditions shall be grounds for revocation of this Executive Order.

Executed at Sacramento, California, this 9th day of July 2010.

James N. Goldstene
Executive Officer
by

Richard W. Corey, Chief
Stationary Source Division

Attachment 1: Proventia FTF™ and Proventia Bobtail FTF™ Engine Family List
Attachment 2: Proventia FTF™ Parts List (Confidential)
Attachment 3: Proventia Bobtail FTF™ Parts List (Confidential)